

Literature Review: Effectiveness Of Online Nutrition Education on Mother Nutrition Knowledge of Stunting Children

Alfi Rahmatillah Nur Fithriah^{1*}, Sumardiyono², Anik Lestari³

¹Department of Nutrition Science, Sebelas Maret University, Surakarta, Indonesia.

²Vocational School, Sebelas Maret University, Surakarta, Indonesia.

³Department of Medicine, Sebelas Maret University, Surakarta, Indonesia.

*Correspondence author : alfi.rahmatillah@students.uns.ac.id

Abstract

One of the unresolved nutritional problems is stunting. Short stature, known as stunting in childhood, is the result of chronic malnutrition or failure to thrive in the past. This study aims to analyze general articles related to the effectiveness of online nutrition education on mother nutrition knowledge of stunting children. Researchers used a literature review study based on data collection from the period between 2019 and 2023 with the keywords stunting/short toddlers, nutrition education, effectiveness of online education, knowledge of stunting mothers' nutrition and stunting mothers' knowledge of nutrition. Data related to topics originating from within and outside the country have been studied and selected from Google Scholar, PubMed, Proquest, and ScienceDirect. The results of the article search process show that 28 articles match the keywords Indonesian and English. After the data was reviewed and re-selected, the remaining 14 articles met the inclusion criteria and were relevant to the research objectives. The conclusion from the results of the literature review of this journal shows that there is an effectiveness of online nutrition education on the nutritional knowledge of stunting mothers.

Keyword: Mother Nutrition Knowledge, Online Education, Stunting

Introduction

Short stature, known as stunting in childhood, is the result of chronic malnutrition or failure to grow and develop in the past. Children who are stunted can be seen from their body size, whether they are in accordance with the growth rate at their age or not. Stunting is also associated with impaired neurocognitive development and the risk of developing non-communicable diseases in the future (Kemenkes, RI 2016).

According to the 2013 Basic Health Research, the prevalence of stunting at the national level was 37.2%; this decreased in 2018 to 30.8% (Kementerian Kesehatan RI 2018). Meanwhile, according to SSGBI (Study of Nutritional Status of Indonesian Toddlers), in 2019, the stunting rate also decreased to 27.67% (Izwardy, 2020). In the SSGI (Indonesian Nutrition Status Study Survey), this figure decreased again in 2021 to 21.4% (Kementerian Kesehatan Republik Indonesia 2021). Based on this prevalence, it is still below the figure expected by the WHO (World Health Organization), namely <20% (Kementerian Desa, 2017). This figure is also still far from the target of reducing stunting in Indonesia by 14% in 2024 (Kementerian Sekretariat Negara RI 2020).

Many factors influence the occurrence of stunting, one of which is the level of consumption and the baby's mother's lack of knowledge regarding nutritional requirements. So, a mother plays a major role in maintaining the nutritional status of her toddler (Amaliah *et al.*, 2012). This statement is in line with research conducted in Kupang Regency, stating that there is a real correlation between the incidence of stunting in toddlers and the level of education of parents, number of family members, and knowledge about maternal diet, especially regarding child nutrition, as well as protein and carbohydrate intake. (Zogara and Pantaleon, 2020).

In order to prevent and overcome stunting caused by low levels of maternal nutritional knowledge, online nutrition education is carried out. This is confirmed by research that online learning and direct learning have the same effect on improvement (Nisrina *et al.*, 2017). In the other research from Setiani and Sriwiyati (2022), online health education is effective in increasing stunting prevention behaviour. According to the research from Kadek *et al.* (2022), there was a significant increase in knowledge before and after education and group discussions using WhatsApp media. We know that WhatsApp media is part of online media. Then, online education about nutrition in stunting cases is also important and can be the choice for prevention. So, this research aims to analyze articles related to the effectiveness of online nutrition education on the nutritional knowledge of stunting mothers of toddlers.

Methods

This study conducted a literature study using the systematic PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) method. The article search process was carried out by operating Google Chrome and databases from Google Scholar, PubMed, Proquest, and ScienceDirect. The sources used come from articles at home and abroad in Indonesian and English. Researchers searched the Google Scholar database by applying the keywords " *Stunting/* Balita Pendek, Edukasi Gizi, Efektivitas Edukasi Online, Pengetahuan Gizi Ibu Balita *Stunting* dan Pengetahuan Ibu Balita *Stunting* Tentang Gizi ". To search the PubMed, Proquest, and ScienceDirect databases, use the keywords "Stunting, Online Education, Mother's Knowledge, and Knowledge of Toddler Nutrition".

This research uses data with criteria, still in the 2019-2023 range, the data used is still relevant to stunting, nutrition education, the effectiveness of online education, nutritional knowledge of stunting mothers and knowledge of stunting mothers about nutrition, the data taken comes from research conducted at home or abroad and data or articles use Indonesian and English.

Results and Discussions

Data or articles that researchers have searched will then be selected and adjusted according to predetermined criteria. The number of articles that have been found is 28 articles, within the scope of the criteria. Fourteen articles met the criteria: 12 articles in Indonesian and 2 articles in English. Fourteen articles were excluded because they needed to meet the criteria. Then, each article is reviewed based on the completeness of the article as a whole (full text). Based on the review results, 14 articles that met the inclusion criteria were selected and included for analysis.

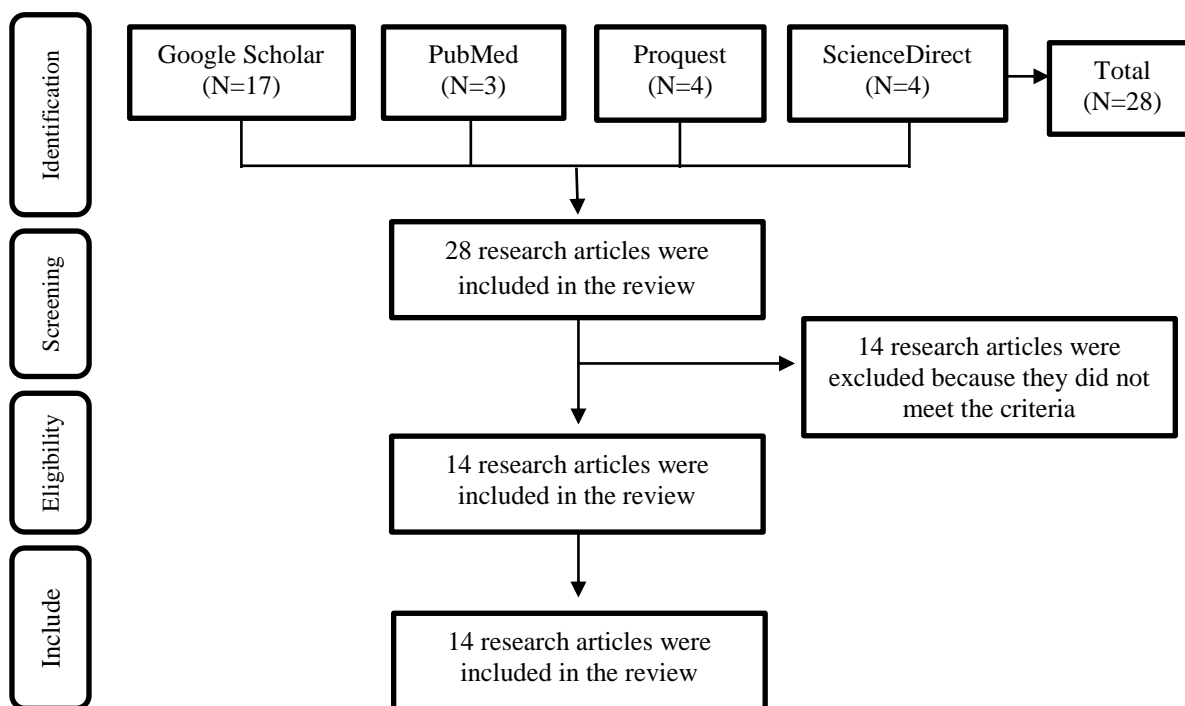


Figure 1. PRISMA flowchart literature search

The following are the results of article analysis using the literature review method and using the observed journals, namely:

Table 1. The result of article analysis

No	Author (Year)	Title	Method	Research Subject	Research Result
1.	Hikmiyah et al. (2019)	Pengaruh Pendampingan Gizi Online Terhadap Pengetahuan Dan Konsumsi Energi Ibu Hamil KEK Di Puskesmas Bululawang	Pre-experimental studies with randomized whitout control pre and posttest design	The total sample was 90 pregnant women who were then randomly divided into 3 groups and received different treatments (group 1 with e-booklets, group 2 with video media,	There were significant differences in knowledge and energy consumption before and after providing online assistance using e-booklet, video, or e-booklet and video media, and the highest average increase in

				and group 3 with e-booklets and videos).	knowledge and energy consumption was in the e-booklet and video media group.
2.	Mahmudah, Aba, and Nggawu (2020)	Efektivitas Pemberian Edukasi secara Online melalui Media Video dan Leaflet terhadap Tingkat Pengetahuan Pencegahan Covid-19 di Kota Baubau	Quasi-Experiment with The Non-Randomized Without Control Group Pretest And Posttest Design approach	The sample was 120 people. The sample was then divided into 3 groups based on the type of educational media provided, namely video media, leaflets and both (video and leaflets).	Education carried out online is effective in increasing public knowledge in Baubau City regarding preventing Covid-19 by using video media as well as leaflets.
3.	Siregar and Koerniawati (2021)	Edukasi Gizi Seimbang Menggunakan Aplikasi Whatsapp pada Siswa Madrasah Aliyah di Kabupaten Bogor	One Group Pretest and Posttest Design	Students in grades 10-12 of Madrasah Aliyah Daarul Fataa, Bojonggede District, Bogor Regency	Increasing the knowledge of MA Daarul Fataa students about balanced nutrition through online education using Whatsapp.
4.	Tane and Sembiring (2021)	Edukasi Online Pemberian MPASI terhadap Praktik Pemberian Makan dan status Gizi Anak Usia 6-24 Bulan	Quasi-experimental pre-post test with a control group	The number of research respondents was 23 for the intervention group and 18 for the control group.	Online education on the practice of giving MP-ASI can improve feeding practices for mothers so that they can be applied periodically to educate mothers about how to give complementary foods. However, there were no significant differences between the intervention and control groups in feeding practices and children's nutritional status.
5.	Ditya Yankusuma Setiani and Sriwiyati (2022)	Efektifitas Pendidikan Kesehatan <i>Stunting</i> dengan Metode Daring Terhadap Perilaku Pencegahan Stunting	Quasi Experimental with pre-test and post-test	31 Mothers in Klaten Regency, Central Java	Online health education is effective for increasing stunting prevention behavior
6.	Hendrawati et al. (2023)	Penggunaan Edukasi Online untuk Pencegahan Stunting pada Masyarakat Umum di Era Pandemi Covid-19	One group design with pre-test and post-test	196 Respondents from Aceh, Sumatra, West Java, Central Java, East Java and Kalimantan.	Online education has been proven to be effective in increasing public knowledge and attitudes in preventing stunting.
7.	Kadek et al. (2022)	Efektivitas Edukasi Stunting dengan Whatsapp terhadap Pengetahuan Orang Tua Balita Stunting	Pre Experiment design, using a one group design with pre-test and post-test	40 Respondent Parents of Stunted Toddlers in Payangan District	There was a significant increase in knowledge before and after education and group discussions using WhatsApp media
8.	Naulia, Hendrawati, and Saudi (2021)	Pengaruh Edukasi Gizi Terhadap Pengetahuan dan Sikap Ibu dalam Pemenuhan Nutrisi Balita Stunting	Quasi experiment non-equivalent control post-test	60 Respondents Mother Toddler Stunting	Nutrition education can increase knowledge and attitudes in fulfilling nutrition so that nutrition can be an alternative intervention to improve health behavior in preventing stunting
9.	Putra et al. (2022)	Efektifitas Aplikasi Edukasi Gizi Remaja Berbasis Android Untuk Pencegahan Stunting	Quasi-experiment with pre-test and post-test	30 teenagers spread across 2 different schools but with almost the same characteristics.	Android-based education or educational applications are an effective medium for increasing teenagers'

					knowledge and attitudes towards stunting
10.	Andoyo et al. (2022)	Pemanfaatan Teknologi Virtual Meeting Dalam Upaya Peningkatan Efektifitas Kegiatan Penyuluhan Kesehatan: Edukasi Pencegahan Stunting Dengan Pangan Tinggi Protein	Quantitative using the Participatory Action Research (PAR) method.	19 Posyandu Cadres	There is an increase in knowledge after being given education
11.	Anjani et al. (2022)	Efektivitas Metode Edukasi Berbasis Mobile Edu App Sebagai Upaya Intervensi Penurunan Stunting Dengan Pendekatan Asuh, Asih, Asah	Experimental analysis with a cross sectional method using a pre-post test design	20 people who are representatives of cadres in Tanjung Mas sub-district who are considered representative as representatives of each RW	The use of Android applications in educational methods as an effort to prevent stunting using a nurturing, asih and asah approach provides effectiveness in efforts to increase the knowledge of posyandu cadres.
12.	Simanjuntak <i>et al.</i> , (2022)	Pengaruh inovasi edukasi gizi masyarakat berbasis social media marketing terhadap pengetahuan, sikap, dan perilaku dalam upaya pencegahan stunting	Quasi experiment with one group pre-test and post-test design.	The intervention was carried out on nutrition education social media viewers with a total of 150 people who were determined voluntarily	The results of the research indicate that knowledge, attitudes and behavior in efforts to prevent stunting have increased so that it shows the success of the interventions carried out in the research
13.	Ernawati et al. (2021)	The Effectiveness of Web-Based Audiovisual Media Applications in Monitoring Children's Growth to Prevent Stunting	Pre-test and post-test quasi-experimental design with a control group	The sample used as the intervention group was 50 people, and the control group was 50 people	Public health education through web-based audiovisual media is effective in increasing parents' knowledge about monitoring the growth and development of toddlers.
14.	Dimitri et al. (2023)	Accelerating Digital Health Literacy for The treatment of Growth Disorders: The Impact of A Massive Open Online Course	Quantitative	219 Users The Mooc	MOOCs can improve digital health literacy in the management of growth disorders

One of the unresolved nutritional problems is stunting. Short stature, known as stunting in childhood, is the result of chronic malnutrition or failure to thrive in the past (Kemenkes RI, 2016). One of the interventions that can be given to increase the nutritional knowledge of stunting toddler mothers is conducting education. Nutrition education can increase knowledge and attitudes toward fulfilling nutrition so that nutrition can be an alternative intervention to improve health behaviour in preventing stunting (Naulia *et al.*, 2021). Nutrition education can be done face-to-face or online. In this research, the authors used online education for the media. So, in the previous articles, they found that online education can increase mother nutrition knowledge in stunting children. This assumption can be linked to the following discussion.

According to research by Setiani dan Sriwiyati (2022), online health education is effective in increasing stunting prevention behaviour. After getting the knowledge, providing online education about appropriate MPASI is also important to improve children's feeding practices (Tane and Sembiring 2021). Apart from that, education carried out online is effective in increasing public knowledge in Baubau City regarding preventing COVID-19 by using video media as well as leaflets (Mahmudah *et al.*, 2020). The same method but a different subject also can be effective.

Online education can be done in various ways, for example, through Zoom meetings, the WhatsApp application, or other Android-based applications. This is explained in research by Kadek *et al.* (2022) that stunting education using WhatsApp media is effective on the level of knowledge of parents who have stunted toddlers in Payangan sub-district in

2022 and is also effective in providing information, then increasing knowledge among Madrasah Aliyah students (Siregar & Koerniawati, 2021). Meanwhile, the use of Android applications in educational methods as an effort to prevent stunting using a nurturing, asih and asah approach provides effectiveness in efforts to increase the knowledge of posyandu cadres (Anjani *et al.*, 2022). This is also similar to research by Andoyo *et al.* (2022) that there was an increase in knowledge after being provided with education via the WhatsApp, Zoom and Trello applications.

Online education has been proven to be effective in increasing public knowledge and attitudes in preventing stunting. Providing education through posters directly or through media that can be accessed online/virtually can increase public knowledge and attitudes towards stunting prevention (Hendrawati *et al.*, 2023). Android-based educational or education applications are also an effective medium in increasing teenagers' knowledge and attitudes towards stunting in this research (Putra *et al.*, 2022). Online mentoring using videos and e-booklets simultaneously, targeting pregnant women, has more influence on increasing the average knowledge and energy consumption of respondents compared to using e-booklets alone or videos alone (Hikmiyah *et al.*, 2019). So, online education or face-to-face education can be used to increase the knowledge of mothers in stunting children. At the end of this discussion, online education or face-to-face education can be chosen depending on the situation and condition.

Conclusions

Based on several articles that have been reviewed and analyzed regarding online nutrition education, the nutritional knowledge of mothers of children under five who are pregnant can be applied as an alternative for providing education, with the aim of conveying information well. Online nutrition education on the nutritional knowledge of mothers of stunting toddlers is known to be effective, considering that in several studies, it has been proven that there is an increase in knowledge after being given online nutrition education.

Acknowledgments

We thank all the authors in the articles for being our references to make this article and all those who have been motivated and supported us. So, this article can be completed.

References

- Amaliah, Nurillah, Kencana Sari, and Rosha Bunga Ch.2012. "Stunting Increased Risk of Delaying Menarche on Female Adolescent Aged 10-15 Years." *Penelitian Gizi Makanan* 35(2): 150–58.
- Andoyo, Robi, Siti Nurhasanah, Syamsul Huda, and Damar Irza. 2022. "Pemanfaatan Teknologi Virtual Meeting Dalam Upaya Peningkatan Efektifitas Kegiatan Penyuluhan Kesehatan: Edukasi Pencegahan Stunting Dengan Pangan Tinggi Protein." *JMM (Jurnal Masyarakat Mandiri)* 6(3): 1817.
- Anjani, Sylvia *et al.* 2022. "Efektivitas Metode Edukasi Berbasis Mobile Edu App Sebagai Upaya Intervensi Penurunan Stunting Dengan Pendekatan Asuh, Asih, Asah." *Jurnal Eduscience* 9(1): 143–51.
- Dimitri, Paul *et al.* 2023. "Accelerating Digital Health Literacy for the Treatment of Growth Disorders: The Impact of a Massive Open Online Course." *Frontiers in Public Health* 11(April): 1–8.
- Ditya Yankusuma Setiani, and Lilik Sriwiyati. 2022. "Efektivitas Pendidikan Kesehatan Stunting Dengan Metode Daring Terhadap Perilaku Pencegahan Stunting." *KOSALA: Jurnal Ilmu Kesehatan* 10(1): 13–19.
- Ernawati, Rini *et al.* 2021. "The Effectiveness of Web-Based Audiovisual Media Applications in Monitoring Children's Growth to Prevent Stunting." *Advances in Decision Sciences* 25(September): 1–11.
- Hendrawati, Sri, Laili Rahayuwati, Habsyah Saparidah Agustina, and Endah Rahayu. 2023. "Penggunaan Edukasi Online Untuk Pencegahan Stunting Pada Masyarakat Umum Di Era Pandemi Covid-19." : 77–87.
- Hikmiyah, Nadhifatul, B Doddy Riyadi, Rani Nurmawati, and I Nengah Tanu Komalyna. 2019. "Pengaruh Pendampingan Gizi Online Terhadap Pengetahuan Dan Konsumsi Energi Ibu Hamil." 1(3).
- Izwardy, Doddy. 2020. *Studi Status Gizi Balita Terintegrasi Susenas 2019*. Jakarta.
- Kadek, Ni, Briggita Brillianti, Ida Erni Sipahutar, and Nyoman Ribek. 2022. "Efektivitas Edukasi Stunting Dengan Whatsapp Terhadap Pengetahuan Orang Tua Balita Stunting."
- Kemendes RI. 2016. "InfoDATIN NfoDATIN." *Scance* ISSN 2442-(Hari anak Balita 8 April): 1–10.
- Kementerian Desa, Pembangunan Desa Tertinggal dan Transmigrasi. 2017. "Buku Saku Desa Dalam Penanganan Stunting." *Buku Saku Desa Dalam Penanganan Stunting*: 42.
- Kementerian Kesehatan Republik Indonesia. 2021. "Buku Saku Hasil SSGI Kab/Kota Tahun 2021."

- Kementerian Kesehatan RI. 2018. "Buku Saku Pemantauan Status Gizi." *Buku saku pemantauan status gizi tahun 2017*: 7–11.
- Kementerian Sekretariat Negara RI. 2020. "Laporan Capaian Pelaksanaan Strategi Nasional Percepatan Pencegahan Anak Kerdil (Stunting) Periode 2018-2020."
- Kesehatan, Kementerian, Badan Penelitian, and Pengembangan Kesehatan. 2018. "Hasil Utama Riskesdas 2018."
- Mahmudah, Rifa, La Aba, and La Ode Nggawu. 2020. "Efektivitas Pemberian Edukasi Secara Online Melalui Media Video Dan Leaflet Terhadap Tingkat Pengetahuan Pencegahan Covid-19 Di Kota Baubau The Effectivity of Providing Online Education through Video and Leaflet Media on the Knowledge Level of Covid-19 Pr." 6(2): 309–18.
- Naulia, Resi Putri, Hendrawati Hendrawati, and La Saudi. 2021. "Pengaruh Edukasi Gizi Terhadap Pengetahuan Dan Sikap Ibu Dalam Pemenuhan Nutrisi Balita Stunting." *Jurnal Ilmu Kesehatan Masyarakat* 10(02): 95–101.
- Nisrina, Nina, Gunawan Gunawan, and Ahmad Harjono. 2017. "Pembelajaran Kooperatif Dengan Media Virtual Untuk Peningkatan Penguasaan Konsep Fluida Statis Siswa." *Jurnal Pendidikan Fisika dan Teknologi* 2(2): 66.
- Putra, Meiki Eru et al. 2022. "Efektifitas Aplikasi Edukasi Gizi Remaja Berbasis Android Untuk Pencegahan Stunting." *Jurnal Endurance* 6(2): 443–51.
- Simanjuntak, M., L.N. Yuliati, R. Rizkillah, and A. Maulidina. 2022. "Pengaruh Inovasi Edukasi Gizi Masyarakat Berbasis Social Media Marketing Terhadap Pengetahuan, Sikap, Dan Perilaku Dalam Upaya Pencegahan Stunting." *Jurnal Ilmu Keluarga dan Konsumen* 15(2): 164–77.
- Siregar, Mukhlidah Hanun, and Ratu Diah Koerniawati. 2021. "Edukasi Gizi Seimbang Menggunakan Aplikasi Whatsapp Pada Siswa Madrasah Aliyah Di Kabupaten Bogor." *Community* 1(1): 16–19.
- Tane, Reisy, and Friska Br Sembiring. 2021. "Edukasi Online Pemberian MPASI Terhadap Praktik Pemberian Makan Dan Status Gizi Anak Usia 6-24 Bulan." *Best Journal (Biology Education & Techmology)* 4(2): 244–49.
- Zogara A.U., Pantaleon M.G. 2020. "Faktor-Faktor Yang Berhubungan Dengan Kejadian Stunting Pada Balita." : 85–92.